96-RA121A.02

# Successful Interim Remedial Action for Free Product Removal of Non-Aqueous Phase Liquids in Groundwater

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AIR & WASTE MANAGEMENT
ASSOCIATION
SINCE 1907

For Presentation at the
89th Annual Meeting & Exhibition
Nashville, Tennessee
June 23-28, 1996

receive recovery system components. The installation time for the recovery systems was approximately three days.

**Maintenance and Operation Cost**

The cost for implementing a free product recovery system is primarily driven by the operation and maintenance cost associated with the system. The capital cost, not including recovery wells, for a one to two pump recovery system is generally low, between $8,000 and $15,000 in 1995 dollars. The key component in achieving a low maintenance and operating cost for a free product recovery system is to achieve a high level of automation so that the labor to monitor and adjust the system is reduced. Another key component is to limit the amount of water that is being recovered with the product.

**Chemical Compatibility**

The treatment system components must be chemically compatible with the product being pumped. The recovery pump, piping, and tank are in constant contact with the product. The materials of construction must carefully be checked against chemical compatibility tables. We had a particularly difficult time selecting pumps that were compatible with toluene and trichloroethene. We initially considered the use of pneumatic bladder pumps which are typically used for petroleum hydrocarbon product recovery. The bladders in the pumps that we considered were constructed out of Buna-n® or Tygon®. Neither of these materials were recommended for use with TCE and toluene by several chemical compatibility charts.[2,3] Some pump manufacturers today offer bladder pumps constructed with Teflon® bladders. Teflon® is compatible with TCE and Toluene. A stainless steel pneumatic piston pump was selected for this site as further described below. Telfon® was selected for the product recovery hose, a 55-gallon steel drum for the product TCE storage, and a 2,000 gallon steel tank with secondary containment for the toluene product storage.

## RECOVERY SYSTEMS DESCRIPTIONS

To simplify operation and maintenance, similar systems were selected for both the DNAPL and LNAPL product recovery systems. Each recovery system principally consists of pneumatic piston pumps, a conductivity sensor or float switch for product sensing, pneumatic pump controller, product recovery tank, and tank high level shut-off switch. The two systems are described in more detail below.

**DNAPL Product Recovery System**

The basic operation of the DNAPL recovery system is as follows. A thin layer of pooled DNAPL on the surface of the confining unit slowly flows into and collects in the sump of the recovery well (see Figure 2). The thickness of the DNAPL increases in the sump until it reaches the on/off probe of the conductivity sensor. The probe of the conductivity sensor is generally set at the top of the pump screen on the bottom filling pump. The conductivity sensor detects the product by the lack of conductance and sends a signal to the pump controller. The pump controller then opens the air valve to pressurize the air line to the pump. The air moves the double-action piston in the pump which draws product into one pump chamber and pushes product from the other pump chamber through a check valve to the product recovery line. After a set pressurized time, the exhaust air valve at the controller opens to expel the air. The exhaust air does not come in contact with the product and therefore is not an air emission source. The pump continues to cycle at the time frequency set at the pump controller until the product level in the sump drops and the conductivity probe senses water again. If water is detected in mid-pump stroke, the controller will immediately reverse the air pressure in the exhaust and air supply lines to push the piston back to the starting position, thus preventing the collection of water.

Although the information was not conclusive, it suggested that the DNAPL in the vicinity of wells MW-27, MW-28, and MW-29 may be pooled in a small basin at the surface of the confining unit.

All of the DNAPL wells were installed a minimum of 1-foot into the clay/shale confining unit, so as to create a sump where a thin layer of pooled DNAPL on the surface of the confining layer could flow and collect in a thicker layer to aid in detection and recovery. After the wells were developed, no recoverable amount of product continued to enter well MW-29. A product recovery test was conducted by bailing the DNAPL out of wells MW-27 and MW-28 once per day for three days. Each day approximately the same volume of DNAPL pooled in the sumps of the wells, indicating that a recoverable volume of DNAPL was entering the wells.

The presence of toluene LNAPL was first observed floating on the groundwater in a 2-inch diameter monitoring well MW-24 installed in the vicinity of a former underground storage tank. The estimated location of the LNAPL occurrence and water table potentiometric surface elevation contours are shown on Figure 1. In an effort to determine the extent of the LNAPL and to install larger wells for LNAPL recovery, four 4-inch diameter recovery wells were installed (RC-1 through RC-4). Approximately 2 to 4 feet of LNAPL was observed in wells MW-24, RC-2, RC-3, and RC-4. LNAPL was not encountered in well RC-1. As shown in Figure 1, the extent of the LNAPL accumulation was established to the west; however, LNAPL had migrated in the direction of groundwater flow underneath the building.

The LNAPL wells were installed approximately 10 feet below the water table elevation and were screened across the water table. Since the water table level was close to the surface, a peristaltic pump was utilized to conduct a product recovery test and a bail down test. The product recovery test confirmed that the aquifer was amenable to product recovery. Although the LNAPL plume could not fully be delineated due to the presence of a building, the bail down test provided information to make a rough estimate of approximately 5,000 gallons of free product to be present in the groundwater formation.

Immediately after determining that recoverable amounts of NAPL were present in the aquifer an interim remedial action was planned to recover the NAPL. The following guiding criteria were considered in the design of the interim remedial action for the product recovery:

- rapid response time,
- low operation and maintenance costs, and
- chemical compatibility with recovery system components.

**Rapid Response Time**

In order to achieve a rapid response time, the decision was made to concentrate on "product only" recovery systems. A recovery system that collects a large volume of water would require the design and construction of a water treatment system to treat the water on site and discharge the water either to the local publicly operated treatment works (POTW) or a nearby creek. It was estimated that to design, obtain air emission and water discharge permits, and construct the water treatment plant would take one and one-half to two years to complete. A product only recovery system requires considerably less design time, no air or water permits, and the recovery system components can quickly be assembled from off the shelf products available from pump and environmental equipment vendors. The time to implement a product only recovery system is generally less than three months. For this site it took approximately three months: one-half month to design and select components for the product recovery systems; one and one-half months for client and regulatory agency review; and one month to order and

## INTRODUCTION

During the remedial investigation at a site located in central Mississippi, two locations were identified where free phase product was present in the subsurface. A light non-aqueous phase liquid (LNAPL) principally consisting of toluene was found while drilling a groundwater monitoring well near the former location of an underground storage tank. The toluene was detected floating in the unconfined water table aquifer approximately 5 feet below ground surface. In another monitoring well, installed less than 250 feet away, a dense non-aqueous phase liquid (DNAPL) consisting of trichloroethene (TCE) was found to be pooled on top of a clay/shale confining layer, approximately 50 feet below ground surface. The estimated locations of the NAPL occurrences are shown on Figure 1. Shortly after the discovery of the free phase products in the aquifer, an interim remedial action was implemented to recover the LNAPL and DNAPL products.

The groundwater monitoring data collected from the site revealed widespread dissolved phase presence of organic solvent compounds. Because of the large dissolved phase plume, any remedial actions to control or remediate the plume would likely involve groundwater modeling, regulatory agency reviews, design, and permits. The goal of the interim remedial action was to recover the NAPLs to reduce the sources contributing to the dissolved phase plume and to implement the action in a rapid manner. The interim remedial action selected and implemented was approved by the regulatory agency with minimal review and no time consuming permit applications.

This paper describes a case study of an interim remedial action to recover product without collecting and treating groundwater. It is not the goal of this paper to discuss NAPL subsurface spill volume estimates, characteristics, transport, and residual NAPL that may remain in the saturated or unsaturated zone. Those topics have been widely discussed in the literature, especially in recent years.

## DESIGN INFORMATION AND CONSIDERATIONS

### Delineation and Recovery Wells

The monitoring well installation program at the site called for the installation of 2-inch diameter monitoring wells. After the discovery of the NAPLs, additional wells were installed to further delineate and recover the NAPLs. Since most of the wells were located where the potential for encountering free product was high, it was decided to increase the diameters of the wells to 4-inches. The 4-inch diameter wells were selected over 2-inch diameter wells to accommodate a wider range in recovery pumps.

The presence of TCE DNAPL was first observed at the surface of a clay/shale confining unit located approximately 54 feet below ground surface. The DNAPL was present in monitoring well MW-27 (see Figure 1). The well was located near a former above ground TCE storage area. Monitoring well MW-27 is a 2-inch diameter well installed approximately 2 feet into the clay/shale confining unit at a depth of 54 feet. The well is screened at the bottom of the well. In an effort to delineate the occurrence of the DNAPL, and install larger wells for DNAPL recovery, a series of four 4-inch diameter recovery wells (MW-28 through MW-31) were installed in the area. Of these, the only wells that encountered DNAPL at the surface of the confining unit were MW-27, MW-28, and MW-29. Because the migration of DNAPL is expected to follow the slope of the confining unit, an elevation contour map of the clay/shale confining unit was constructed to determine the expected direction of the DNAPL flow (see Figure 1). Note that well MW-31, with the lowest surface elevation, did not encounter any DNAPL.

The controller is similar to a typical pneumatic controller, with the exception of the conductivity sensor control logic. The remaining features of the controller consist of a pressure regulator, cycle timer to adjust the duration of supply air to the pump and pause time, and pump flow control valves. The conductivity sensor control logic turns relays on and off which in turn switch the controller on and off. The conductivity sensor control logic can be disengaged and the controller operated per the cycle timer setting. This feature was selected so that the system could be converted to a total fluids recovery system in the event that a groundwater treatment system is installed in a future remedial action.

The system requires an air source to operate the pneumatic pumps and a 115 volt power supply source to power the control logic. We considered purchasing a dedicated air compressor for the system, but opted to use the plant air source which was available at the facility.

Things to keep in mind when selecting an air source are: pumping volume, hydraulic head, and purity of the air. Systems that only recover product generally are intermittent low volume flows and, therefore, do not require a large air source. A total fluids product recovery system involves continuous pumping and higher flow volumes, which require the use of a larger air compressor capable of continuous duty or another type of pump. The pressure of the air source must be enough to overcome the static head and friction losses in the recovery system. The pump will develop liquid transfer pressures close to the air supply pressure. The plant air supply source that we used produced approximately 80 psi which resulted in a pumping capacity of approximately 126 feet of head. The head capacity was calculated by converting the pressure into feet of water and dividing by the specific gravity of TCE, which is 1.46. The air source to the controller and the pump must be dry and clean to minimize wear and reduce maintenance cost on air valves and on the pump. A dryer/filter located close to the inlet of the controller should be used to remove dust, pipe scale, and moisture from a plant air source or from a dedicated air compressor.

In order to prevent overflow of the product recovery container, a float shut-off switch should be installed in the tank or the drum. Generally, the DNAPL recovery rate is low on product only systems and as a result it could take one-half a year to fill a 55-gallon drum. Due to the slow recovery rate product recovery systems that are automated may only need to be checked once per month. A failure in the conductivity sensor could cause continuous pumping; without a float shut-off switch in the tank or drum a system infrequently inspected could overflow.

**LNAPL Product Recovery System**

The LNAPL product recovery system essentially uses the same equipment as the DNAPL recovery system. The differences in the systems primarily stems from the LNAPL being present as a floating free phase product rather than a sinking free phase product. The pump control logic on the LNAPL system includes a float control switch which is not used on the DNAPL system. A conductivity sensor is still used for the LNAPL system, but is used mainly for adjusting the pump position in the well. Figure 3 depicts the LNAPL system installed for this project.

## OPERATION AND MAINTENANCE

The operation of the LNAPL and DNAPL recovery systems consisted of conducting a bimonthly or monthly inspection of each system which included checking the product recovery lines for wear, air lines for leaks, air dryer/filters, product recovery volumes, correct operation of the pumps, and making adjustments as necessary. Approximately every 6 months the pumps and conductivity sensors were pulled from the wells for cleaning. After one and one-half years of operation the only operational problems were minor air leaks in the air lines and the conductivity probe on the DNAPL pump sliding down, which resulted in the pumping of water. The conductivity probe was attached to the pump by the equipment vendor with polyethylene straps, which were weakened by the TCE. The conductivity probe slid down below the intake of the pump and water was pumped into the 55-gallon drum until it was full and the float shut-off switch in the drum shut down the system. The polyethylene straps were replaced with stainless steel hose clamps to address this problem.

The cost of conducting the operation and maintenance on the product recovery systems was approximately $50,000 per year. The recovered toluene was transported off site and recycled at a cost of approximately $1.00 per gallon. The recovered TCE was transported off site and incinerated at a cost of approximately $6.00 per gallon. The high cost for disposal is primarily due to a large transportation cost.

Figure 4 shows a product recovery chart for the DNAPL recovery system. The chart includes the period from when the system was installed in October 1993 until May 1995. The chart shows the total cumulative amount of TCE recovered and the weekly recovery rates. No product was recovered between December 21, 1994 and January 24, 1995 as a result of the conductivity probe sliding down the pump. As shown on Figure 4, it took several inspection periods to reposition the conductivity probe and the pump for optimum recovery due to variations of the DNAPL.

A product recovery chart for the LNAPL recovery system is presented in Figure 5. The chart includes the period from when the system was installed in November 1993 until May 1995. As shown by the chart, the product recovery rate gradually dropped as more product was recovered and less recoverable product remained in the formation.

## CONCLUSIONS

The goal of this interim remedial action was to rapidly implement a product only recovery system while remedial options at the site are evaluated and an overall groundwater remedy selected, designed, permitted, and constructed. The product recovery systems were installed within approximately 3 months of the installation of recovery wells. A recovery system that involved groundwater extraction and on site treatment would take a minimum of one and one-half years to implement. This interim remedial action is considered a success because it has collected over 2,044 gallons of toluene and 175 gallons of TCE from the aquifer over a one and one-half year period without waiting for more comprehensive approvals, permits, and implementation of a site-wide remedial alternative.

One remedial action being contemplated for the site is containment of the dissolved phase plume by installing a downgradient groundwater extraction system and constructing an on site groundwater treatment plant. In order to control the TCE dissolved phase plume from these source areas approximately 70 gpm of water would have to be extracted and treated. Similar sized groundwater treatment systems consisting of air stripping followed by granular activated carbon adsorption cost approximately $500,000 in capital and $200,000 per year to operate and maintain (O&M). As a rough approximation, by using the current average TCE concentration of 500 ug/L across the downgradient dissolved phase plume, approximately 2.9 million gallons of water would have to be removed from the aquifer to recover 1 gallon of TCE. Under a plume control scenario it will take at least 14 years of downgradient groundwater pumping and treatment to recovery 175 gallons of TCE from the dissolved phase plume. At a 10 percent discount rate the present worth cost of a groundwater pump and treatment system for 14 years is \$2.0 million. This equates to a possible savings of \$11,000 per gallon of TCE removed by DNAPL recovery versus TCE removed by groundwater pumping and treatment under a dissolved phase plume control scenario. This savings is based on the actual cost for TCE removal by DNAPL recovery of approximately 520 dollars per gallon of TCE.

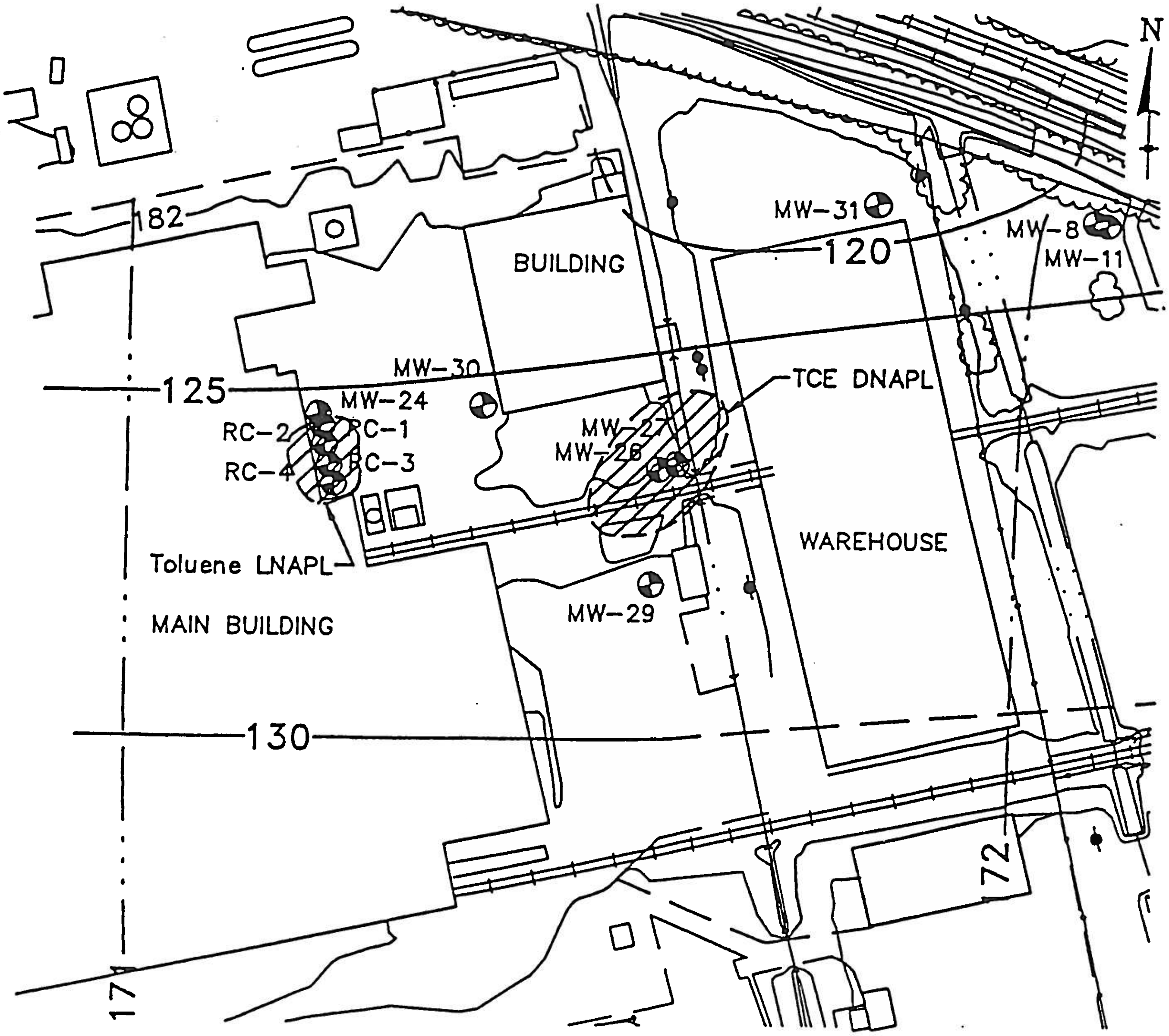
If the selected future remedial option for the site involves installing a groundwater treatment plant, the product only recovery systems could be modified to include total fluids recovery. Recovery of total fluids will enhance the recovery of product. The free phase product could be separated from the water and the water treated by the on site groundwater treatment plant.

## REFERENCES

1. J. Parker, D. Waddill, and J. Johnson UST Corrective Action Technologies: Engineering Design of Free Product Recovery Systems, Superfund Technology Demonstration Division, Risk Reduction Engineering Laboratory, 1995.

2. Anonymous, Chemical Resistance Chart, Little Giant Pump Company, Oklahoma City, Undated.

3. Anonymous, Tubing Compatibility Tables, Masterflex Tubing, Undated.




Legend

Water Table Potentiometric Surface Elevation Contour

130 Clay/Shale Confining Unit Elevation Contour

NAPL Occurrence Area

Figure 1. NAPL occurrence and clay/shale confining unit surface contour map.

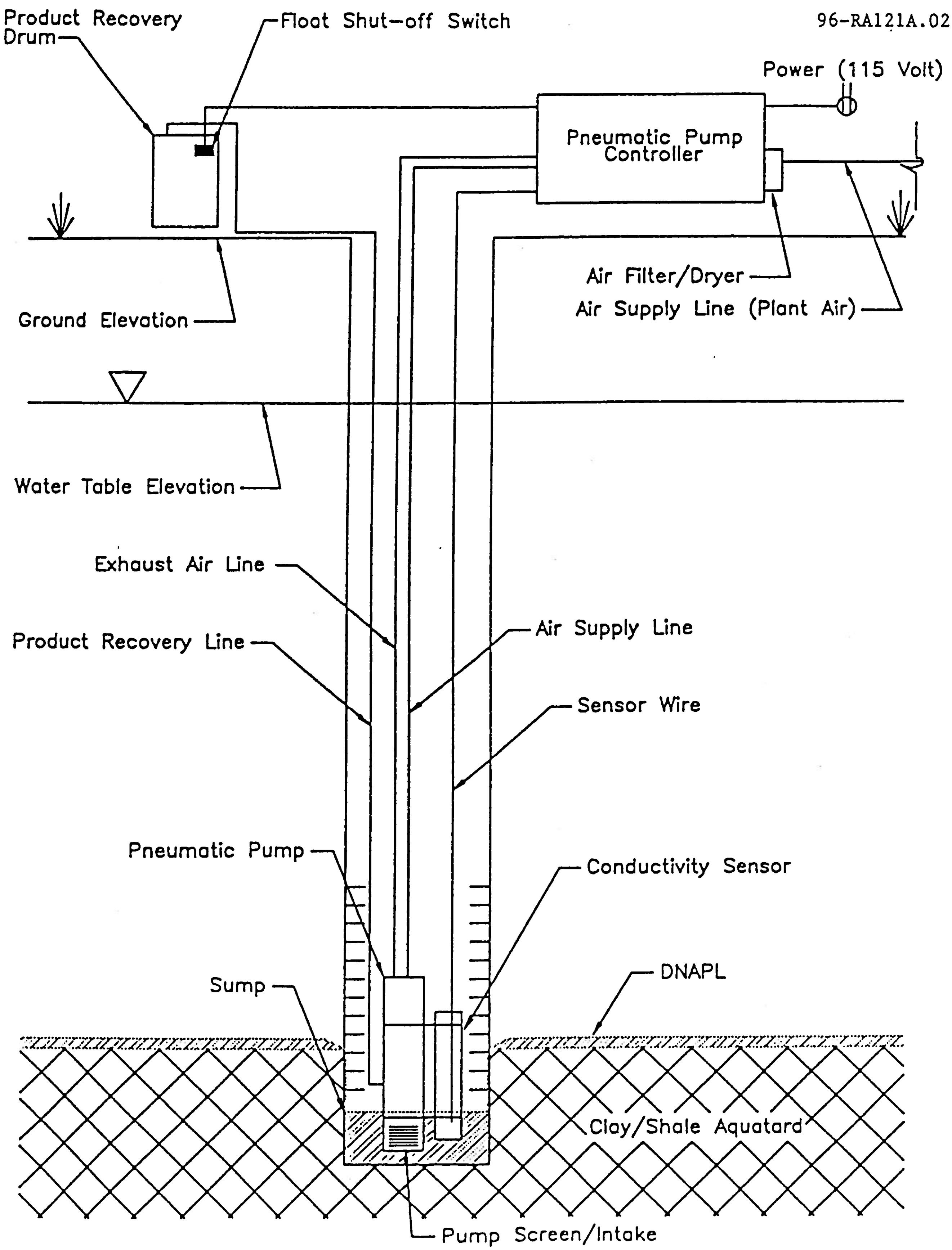



Figure 2. DNAPL product recovery system.

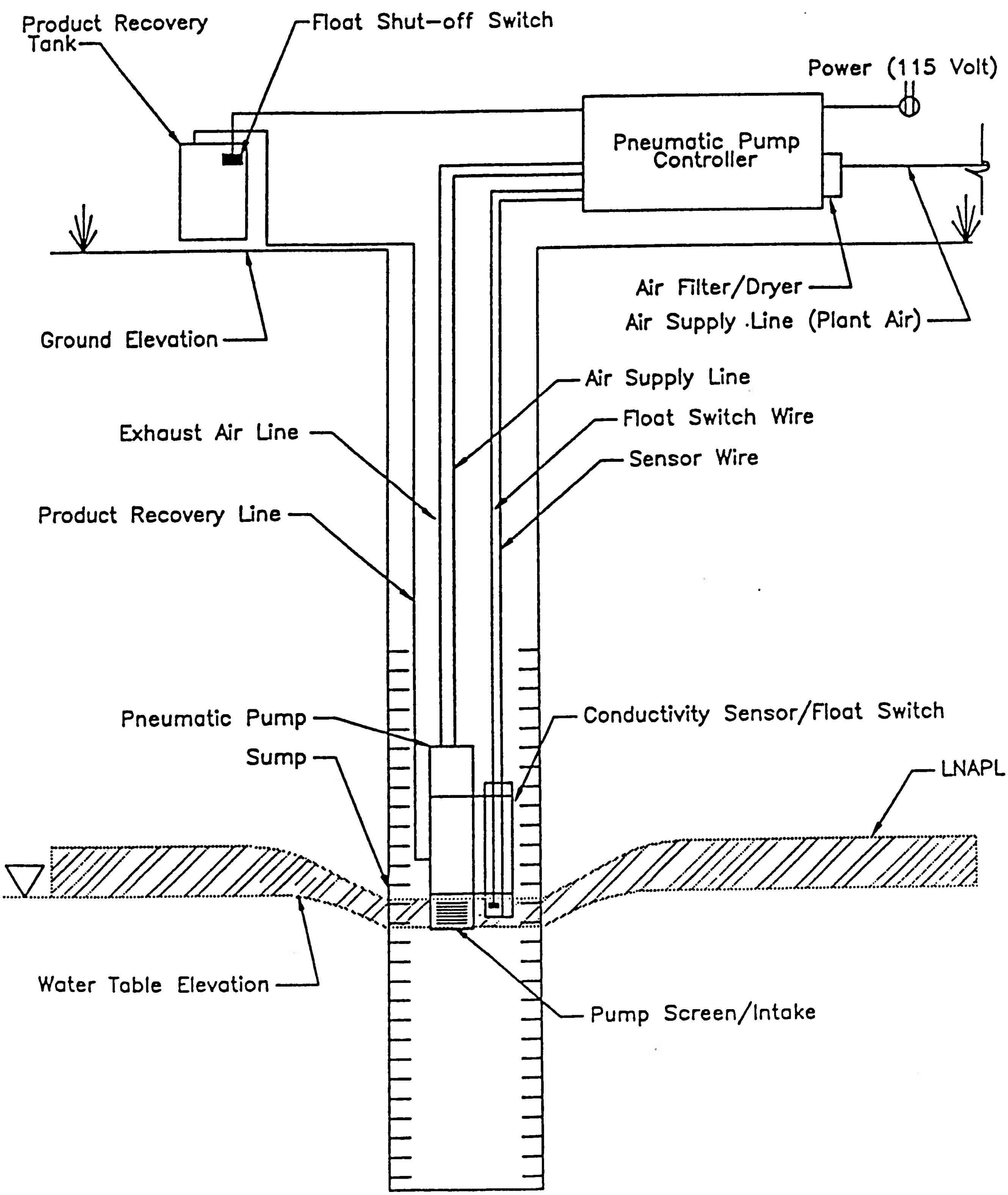



Figure 3. LNAPL product recovery system.

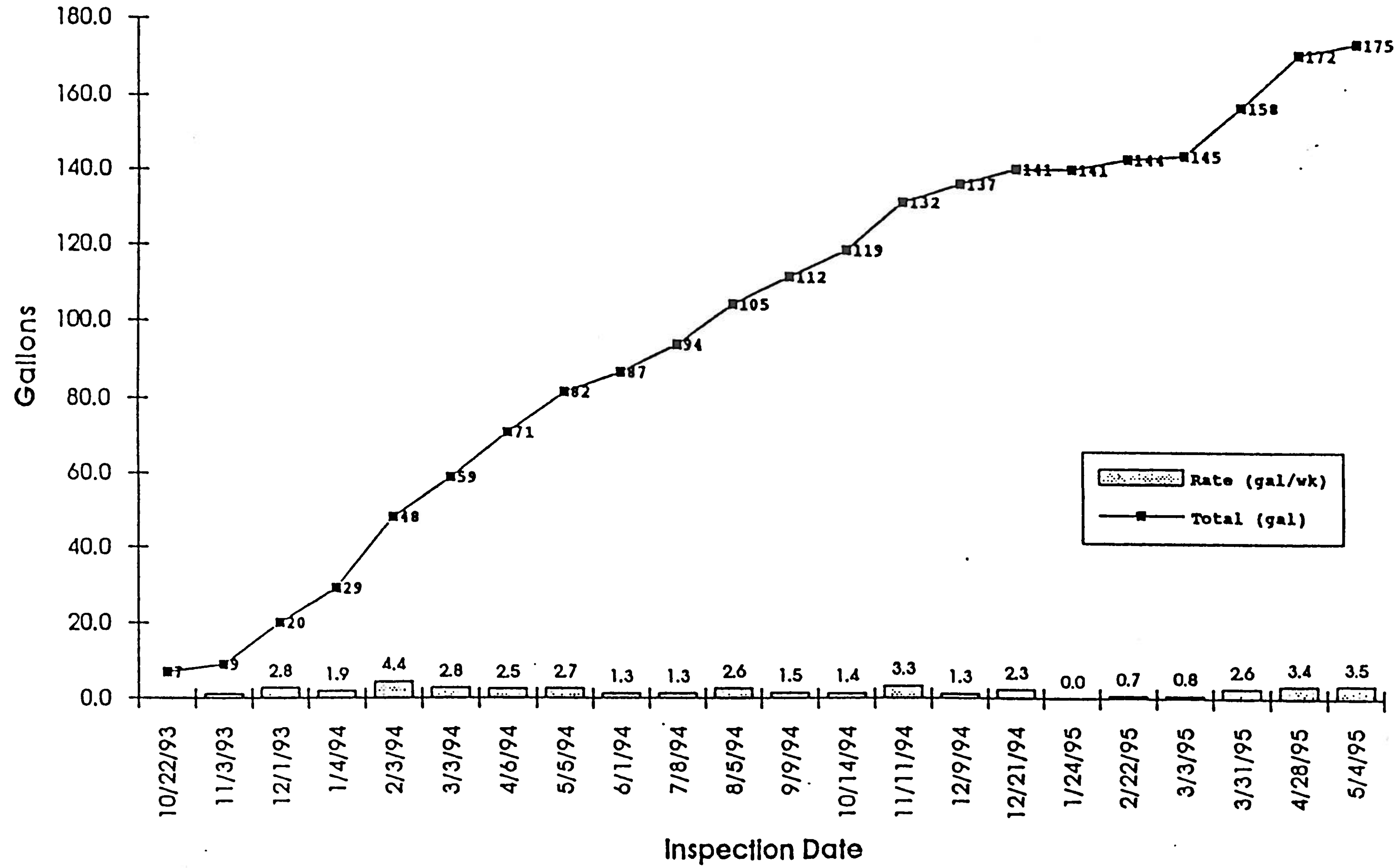



Figure 4. TCE (DNAPL) product recovery.

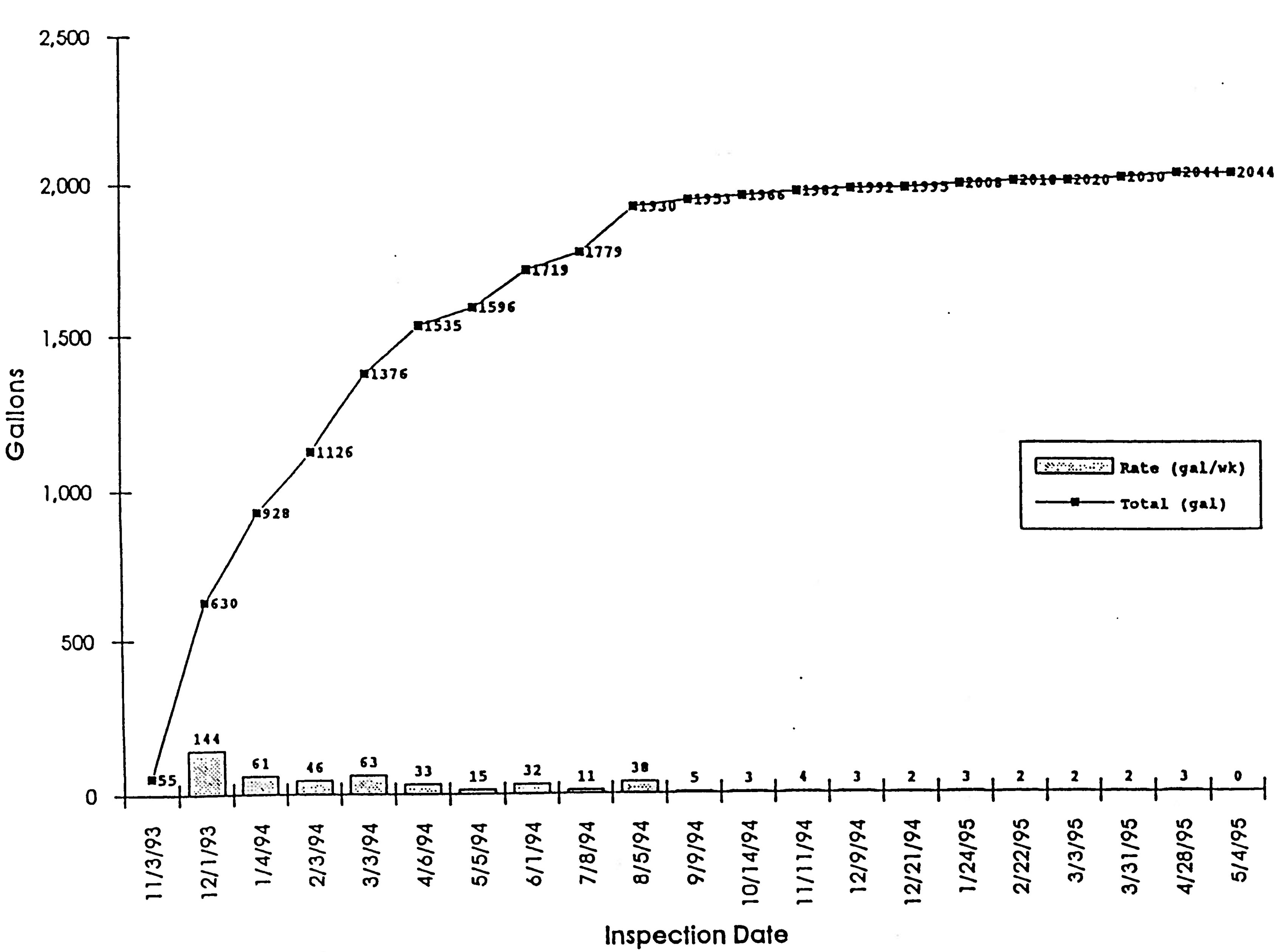



Figure 5. Toluene (LNAPL) product recovery.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

DEC 11 1996

4WD-RCRA

CERTIFIED
RETURN RECEIPT REQUESTED

Mr. Don Williams
Plant Environmental Coordinator
Randall-Textron
635 Highway 332 East
Grenada, MS 38901

Reference: VSI Notification Letter and Agenda
Randall-Textron; Grenada, Mississippi
EPA I.D. No. MSD 007 037 278

Dear Mr. Williams:

The Environmental Protection Agency Region 4 is conducting a Visual Site Inspection (VSI) of the Randall-Textron facility in Grenada, Mississippi on January 7-9, 1997. The Hazardous and Solid Waste Amendments (HSWA) of 1984 provide EPA authority under RCRA to require comprehensive corrective actions on releases of hazardous constituents to air, surface water, soil, and ground water at all facilities which manage hazardous waste. The results of this VSI will be incorporated into a RCRA Facility Assessment (RFA) Report.

The objectives of the VSI are to identify all Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) located at the facility to determine their potential for past or ongoing releases of hazardous constituents. The VSI will be conducted by A.T. Kearney, a contractor for the EPA.

Attachment A is a tentative agenda and inspection plan for the VSI. The agenda also includes a list (Table 1) of the potential SWMUs and AOCs identified from the file material during the preliminary review. Attachment B is a summary of information needed to fill in information gaps which have been identified to date.

Please develop a response to each of these questions listed in Attachment B of the VSI agenda. We want to produce a RFA Report which reflects only accurate information regarding your facility; therefore, it is requested that the responses should be presented to the VSI team during the VSI. The attachments will be reviewed with facility personnel at the beginning of the VSI to facilitate the actual inspection. At that time, the VSI schedule will be adjusted as needed to allow a complete, thorough and expeditious inspection of all current and past SWMUs, and review of current waste management practices at the facility. The inspection will encompass all current and past waste handling, storage, treatment, staging, transfer, and disposal areas including both indoor and outdoor units. During the VSI, photographs will be taken to document the condition and location of all SWMUs and AOCs identified during the VSI, and facility waste management practices in general.

In preparation for the VSI, the contractor is required to identify any potentially hazardous conditions likely to be encountered during the VSI, and if necessary, prepare a safety plan to deal with anticipated hazards. The contractor will contact you prior to the VSI to obtain specific information concerning health and safety requirements and the materials handled at your facility.

The VSI team will consist of two technical representatives from A.T. Kearney. Personnel from federal and state agencies may also join the VSI.

If you have any questions concerning the VSI, please contact the EPA Work Assignment Manager, Jan Martin, who can be reached at (404) 562-8593.

Sincerely,

12/6

Narindar Kumar
Chief, RCRA Programs Branch
Waste Management Division

Enclosures: 1) Proposed Agenda
2) RFA Information Needs

cc: J. Martin, EPA Region 4
L. Butler, EPA Region 4
D. Peacock, MDEQ
C. Harris, A.T. Kearney
C. DenBrok, A.T. Kearney

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The VSI team will consist of two technical representatives from A.T. Kearney. Personnel from federal and state agencies may also join the VSI.

If you have any questions concerning the VSI, please contact the EPA Work Assignment Manager, Jan Martin, who can be reached at (404) 562-8593.

Sincerely,

N. M. Kumar

Narindar Kumar
Chief, RCRA Programs Branch
Waste Management Division

Enclosures: 1) Proposed Agenda
2) RFA Information Needs

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- Complete items 1 and/or 2 for additional services.
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Mr. Don Williams
635 HWY 332 East
Grenada, MS 38901

4a. Article Number
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☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery 12/10/96

5. Signature (Addressee) Wardean B. [illegible]

6. Signature (Agent)

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PS Form **3811**, December 1991 ★U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

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| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Address of Delivery | |
| TOTAL Postage & Fees | $ |
| Postmark or Date | |

PS Form **3800**, June 1990

## ATTACHMENT A

## PROPOSED RCRA VISUAL SITE INSPECTION AGENDA

**Facility:** Randall-Textron
**EPA ID No.:** MSD 007 037 278
**Facility Contact:** Don Williams

**Date of Inspection:** January 7-9, 1997

**Inspection Team:** Jan Martin, EPA Region 4
Lael Butler, EPA Region 4
David Peacock, MDEQ
Charlotte DenBrok, A.T. Kearney
Kyle Hvidsten, A.T. Kearney

### OBJECTIVES OF VISUAL SITE INSPECTION

The Hazardous and Solid Waste Amendments (HSWA) of 1984 broadened EPA's authority under RCRA to require corrective action for releases of hazardous wastes and solid wastes containing hazardous constituents at facilities which manage hazardous wastes. This corrective action authority extends to all Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) which are found at a facility. The first phase of the program is the preparation of a RCRA Facility Assessment (RFA) Report. The RFA process consists of a number of steps, including a Preliminary Review (PR) of all available file information, a Visual Site Inspection (VSI) of the facility, and if deemed necessary, a Sampling Visit. A PR of this facility has been conducted and it has been determined that a VSI is necessary. The purpose of the VSI is:

1. To collect all available, relevant information on solid waste management practices that have been used, or are currently in use at the facility;

2. To gain first-hand information with regard to the identification, location, construction, function and method of operation of each SWMU identified in the PR, and any other SWMUs located during the course of the VSI;

3. To validate the information obtained during the PR phase;

4. To determine if additional SWMUs or AOCs are located on the site;

5. To identify potential sampling points for possible future sampling activities;

6. To review the site information and collect additional information, and to address the information needs found in Attachment B; and,

7. To make a photographic record of SWMUs, AOCs, and current waste management practices at the facility.

## INSPECTION PLAN AND SCHEDULE

EPA's contractor, A.T. Kearney, will send a two-person field team to perform the VSI. Observers from EPA Region IV and MDEQ may also participate in the inspection. It is expected that the inspection will take three days to perform. However, the field team is prepared to extend the VSI through January 10, 1997, if necessary.

The field team will inspect all past and current SWMUs and AOCs, and all hazardous waste handling, storage, treatment, and disposal areas on the site. Both indoor and outdoor units will be inspected. Production and product storage areas will also be inspected to acquire a complete understanding of the facility processes, waste flow, and waste management practices. The team will also identify, inspect, and document potential pathways for the release of hazardous constituents or wastes to the environment. Facility staff will be interviewed to develop a better understanding of past and current waste management practices, and the local environment (particularly, geological and hydrogeological information requested in Attachment B). At this time the facility may present any additional data which they believe may be germane.

The rationale for the inspection is to allow the team to trace waste flow at the facility from the point(s) of generation to its ultimate disposal. In doing this, all SWMUs will be identified, located, and described in sufficient detail to allow a determination to be made as to whether they are currently, or have in the past, released hazardous constituents or wastes to the environment.

The schedule on the next page is based on the initial PR and is intended to allow a thorough inspection of the facility. Further investigation during the VSI may reveal additional SWMUs, or that some units previously identified are in fact not SWMUs. Some adjustments to the agenda will more than likely be necessary to accommodate facility staff, geographical location of units, and/or operational constraints. The schedule will be reviewed during the introductory meeting, and adjusted at that time. The VSI team will make every reasonable effort to adjust to the facility's normal operating schedule.

## PROPOSED SCHEDULE

| TIME | ACTIVITY |
|---|---|

**Tuesday, January 7, 1997**

| | |
|---|---|
| 8:00 - 12:00 | Conduct introductory meeting with facility representatives to discuss agenda, past and present facility operations, waste streams, waste management practices, safety and health considerations, information needs, and transportation arrangements. Identify any SWMUs and AOCs not in tentative list, resolve any other problems with list of SWMUs and AOCs. |
| 12:00 - 1:00 | Lunch Break |
| 1:00 - 5:00 | Begin facility tour of SWMUs and AOCs. |

**Wednesday, January 8, 1997**

| | |
|---|---|
| 8:00 - 12:00 | Continue tour of facility SWMUs and AOCs. |
| 12:00 - 1:00 | Lunch Break |
| 1:00 - 5:00 | Continue tour of facility SWMUs and AOCs. |

**Thursday, January 9, 1997**

| | |
|---|---|
| 8:00 - 12:00 | Continue facility tour of SWMUs and AOCs. |
| 12:00 - 1:00 | Lunch Break |
| 1:00 - 3:00 | Continue facility tour of SWMUs and AOCs. |
| 3:00 - 5:00 | Closeout meeting with facility representatives. Discuss additional information needs generated by VSI. Obtain copies of any facility offered information. |

**Friday, January 10, 1997**

Reserved, if needed, to complete the VSI.

## TABLE 1
## POTENTIAL SWMUs and AOCs

| SWMU NO. | SWMU NAME |
|---|---|
| 1. | Less-Than-90-Day Drum Storage Area |
| 2. | Equalization Lagoon |
| 3. | On-Site Landfill |
| 4. | Off-Site Landfill - West of Route 333 (Disposal Area No. 1) |
| 5. | Off-Site Landfill - East of Route 333 (Disposal Area No. 2) |
| 6. | Moose Lodge Road Disposal Area |
| 7. | Sludge Lagoon |
| 8. | Former Toluene Underground Storage Tank Area |
| 9. | Former Trichloroethylene Storage Area |
| 10. | Former Burn Area |
| 11. | Multi-Chamber Solid Waste Incinerator |
| | A. Baghouse |
| | B. Scrubber |
| 12. | Waste Water Treatment Plant - Tank Treatment System |
| 13. | Waste Water Treatment Plant Laboratory |
| 14. | Raw Waste Pump Station |
| 15. | Buffing Machines |
| 16. | Steam-Heated Cleansing Tank |
| 17. | Hot-Water Tank |
| 18. | 3 Chrome-Plating Tanks |
| 19. | Caustic Solution Soda Tank |
| 20. | Flask Mix Tank |
| 21. | Acid Storage Tank |
| 22. | Deep Well Storage Tank |
| 23. | Aboveground Storage Tank Farm |
| 24. | Chromium Reduction Unit |
| 25. | Chromium Recovery Unit |
| 26. | Destruct Pit (17,000 gallon) |
| 27. | Former Drum Storage Area for Drill Cuttings |
| 28. | Filter Press |
| 29. | Paint Booths |
| 30. | Stormwater Collection System |
| 31. | Drainage Ditches |
| 32. | Satellite Accumulation Areas |
| 33. | Loading/Unloading Areas |
| 34. | Rolloffs/Dumpsters |
| 35. | Parts Washers |

# ATTACHMENT B

## RFA INFORMATION NEEDS

1. Provide a description of waste management practices and dates implemented.

2. Provide type and volume of waste generated.

3. Provide most recent biennial report.

4. Provide surrounding land use information (e.g., distance to population centers, distance to drinking water sources).

5. Provide description of drum storage areas:
   - Location
   - Type and volume of waste
   - Secondary containment
   - Frequency of pick-up for disposal/treatment
   - Treatment/disposal method

6. For each accumulation area, provide:
   - Description
   - How long was waste normally stored
   - Type and number of containers
   - Type of waste generated
   - Waste management procedures
   - Spill/release history

7. For each SWMU listed, please give:
   - Date unit began operating
   - Date operations ceased (if applicable)
   - Dimensions of unit
   - Material of construction
   - Location of unit in facility
   - Description of waste handled
   - Unit Function

8. Provide a site map of suitable scale to show boundaries of all contiguous property which can be used to show the locations of the SWMUs and AOCs on the property.

9. Provide sanitary, storm water, and industrial sewer maps.

10. Provide copies of all current Federal and State permits granted.

## ATTACHMENT B (continued)

### RFA INFORMATION NEEDS

11. Provide inspection reports for all underground storage tanks, both former and present.

12. Provide a list of any air pollution control devices utilized at the facility and provide the most recent permit and permit applications.

13. Provide information from any soil borings performed at the facility, and any hydrogeological studies performed there.

14. If the facility operates under a NPDES permit, provide the results of the most recent compliance monitoring test results and documentation of any violations.

15. Identify past or present SWMUs and AOCs which have not been identified in the VSI Agenda. Include a brief description of the wastes managed in these units, the period of operation, and a physical description. Units include, but are not limited to the following:

    - Aboveground and underground waste storage tanks
    - Abandoned storage tanks
    - Waste storage units for solid and hazardous wastes which fall under the 90-day exemption from RCRA
    - All waste handling areas and associated activities including loading zones, transfer areas, and waste accumulation areas
    - Runoff collection sumps

16. Identify sources (including private wells) of drinking water in the area. Where does the facility obtain its drinking and process water?

17. How are domestic refuse and sanitary wastes handled at the facility?

18. Provide recent sampling results:

    - Ground water
    - Soil
    - Waste streams

19. Provide the start-up date of the facility and submit a history of the facility prior to the start-up date, including former owners, site uses, manufacturing processes used, waste generated, and existing buildings and/or structures.

20. Provide a description of all hazardous wastes that have been or still are treated, stored, or disposed at the facility.

## ATTACHMENT B (continued)

### RFA INFORMATION NEEDS

21. Provide a map depicting the locations of processes and potable water wells existing at the facility.

22. Provide a summary of spills or releases at the site that were not associated with any solid waste management unit. Information should include but not limited to: date of spill, location of the spill, material and quantity spilled, the nature of the spill, and any remediation measures taken.